

# PROGRESS OF MEDICAL SCIENCE

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## MEDICINE

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UNDER THE CHARGE OF

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**Vaccine Therapy of Typhoid Fever.**—MEYER (*Berl. klin. Wchnschr.*, 1915, lii, 677) reports favorable results in 62 cases of severe typhoid fever treated by vaccine therapy. He found that the intravenous injection of a sensitized vaccine in the later stages of typhoid particularly tended to develop immunity. He believes that these injections are especially useful when applied during convalescence to prevent relapses and late sequelæ of typhoid fever.

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**Specific Treatment of the Malignant Forms of Malaria.**—BASS (*Jour. Amer. Med. Assn.*, 1915, lxy, 577) says that the proper specific treatment of malignant or pernicious malaria is quinin administered intravenously. The dose and method of administering quinin intravenously are important. Bass does not believe that it is ever necessary to exceed 30 grains of quinin hydrochlorid during twenty-four hours when administered intravenously. He emphasizes the point that a single dose should never exceed 10 grains of the hydrochlorid. Large doses of quinin given intravenously are very dangerous. Twenty grains often produce considerable shock, dizziness, nausea, etc., and a dose of 50 grains has killed in several instances. Bass believes that 10 grains of quinin hydrochlorid given intravenously every eight hours or 5 grains every four hours will kill plasmodia in the blood stream and prevent their reproduction as certainly as any larger quantity and will not endanger the life of the patient. The author discusses briefly the subject of malarial hemoglobinuria. In malarial hemoglobinuria, red cells containing plasmodia, and thus damaged, are affected more certainly and more extensively than the normal cells. As a result they are hemolyzed, leaving the plasmodia they contained exposed

to the plasma, which promptly destroys them. The only object of giving quinin in malaria is to destroy plasmodia, and if most or all of the plasmodia have disappeared, which is the case in hemoglobinuria, there is no indication for quinin. There is a certain amount of contra-indication, however, because quinin tends to increase hemoglobinuria or to precipitate attacks in otherwise susceptible individuals.

**Contribution to the Pathology of the Blood in Chronic Lead Poisoning.**—SEHNITTER (*Deutsch. Arch. f. klin. Med.*, 1915, cxvii) draws the following conclusions after studying the blood of 196 cases of lead poisoning: (1) Basophilic stippling of the red cells is always present in chronic cases. (2) There is no constant relation between the degree of blood changes and the severity of the clinical manifestations. In general, however, they are roughly parallel. (3) The anemia present is most apt to be of the chlorotic type. (4) In a progressive intoxication, polychromatophilia appears first, followed by stippling. As the poisoning progresses, anisocytosis and reduction in the number of red cells may become very marked and is frequently associated with varying numbers of normoblasts, which may occasionally occur in crises. (5) A completely aplastic blood picture, such as is seen in benzol poisoning almost never occurs. (6) Most cases are associated with a moderate leukocytosis, which indicates a better prognosis than in those associated with a leukopenia. (7) The differential count shows a lymphocytic increase which may include the large mononuclear and transitional cells. The platelets are usually enormously increased. (8) Severe blood changes require six months to a year for complete restoration.

**The Estimation of the Rest N. in the Blood as a Method of Testing Renal Function.**—H. HOHLWEG (*Mitt. u. d. Grenzgeb. d. Med. u. Chir.*, 1915, xxviii, 459), in association with Meyer, was among the first to demonstrate the value of determining the rest N. of the serum in the diagnosis and prognosis of severe nephritis. In the present communication, he reports observations on the rest N. of the serum of patients with uni- and bilateral kidney disease, before and after operation. He found normal values in pure unilateral disease and no increase following nephrectomy if the remaining kidney was normal. In patients with one diseased kidney and a toxic injury in the other, the rest N. is increased. Values up to 75 mg. for 100 c.c. of serum do not contra-indicate operation and in general indicate that the process in the good side is still reparable, or at least capable of improvement. Values of 100 mg. contra-indicate operation. The rest N. may increase just after operation but in four to six weeks it returns to its original level and may go lower than normal.

**The Value of Uric Acid Determinations in the Blood.**—Within recent years Brugsch and Schittenhelm have asserted that normal blood contains no uric acid. Its presence they consider as pointing to the existence of gout. FOLIN and DENIS (*Arch. Int. Med.*, 1915, xvi, 33) point out the fallacy of Brugsch's clinical method for the demonstration of uric acid by means of the well-known phosphotungstic acid reagent. It should be remembered that all blood contains varying amounts of phenols which also give a blue color with the above reagent, in fact

in some cases the amount of color produced may be two or three times greater than that given by the uric acid present in the blood. Folin and Denis are convinced that all short-cut methods so far proposed for the clinical determination of the uric acid in the blood are bound to give grossly misleading results. They have found by their method that normally uric acid is present in from 1.5 to 2.5 mg. per hundred cubic centimeters, and that in gout, lead poisoning, leukemia and some cases of nephritis, these amounts may be greatly increased. As a result of their study of several hundred uric acid determinations, made on many different kinds of human blood, Folin and Denis have become convinced that even exact quantitative uric acid determinations are not by themselves an adequate protection against frequent mistakes in the differential diagnosis of gout and other joint diseases. From tables which accompany the present article it will be seen that to be of material help in the differential diagnosis of gout, the uric acid determinations must be accompanied by determinations of the non-protein nitrogen. For any joint disease other than gout it is by no means uncommon to find uric acid values nearly, if not quite, so high as in gout. In arthritis, however, a high non-protein nitrogen is more frequent than a high uric acid, thus resembling frequently the blood from a case of glomerular nephritis. In addition to the determination of the uric acid and non-protein nitrogen, the patient must be put on a purin-free diet for at least two days before blood is withdrawn for analytical purposes.

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**Clinical Value of Diastolic Blood-pressure Determinations.**—WARFIELD (*New York Med. Jour.*, 1915, cii, 509) is of the opinion that far too little importance is generally attached to the determination of the diastolic blood-pressure, and emphasizes the fact that pressure determinations in general, to be of any real value, should always include the systolic, diastolic and pulse pressure. These three constitute what he chooses to term the "pressure picture." After a brief discussion of the various opinions regarding the exact time at which the diastolic pressure should be read by the auscultatory method, Warfield points out the following clinical facts in support of his contention that the estimation of the diastolic pressure is more important than that of the systolic: (1) The diastolic pressure is more constant in individuals than the systolic. (2) Since it measures peripheral resistance, it would seem to be a more accurate index of either high or low tension than the systolic pressure. (3) A gradually rising diastolic pressure is of more significance than high systolic pressure. (4) Pulse pressure can only be accurately determined when the diastolic pressure is carefully measured. Large pulse pressures are apparently essential for the compensation of hypertension cases, while falling pulse pressures in such cases, indicate a failing heart. A pulse pressure below 30 mm. of mercury must be regarded as low, those above 50 as high. (5) The diastolic pressure should be taken by the auscultatory method at the sudden transition from the loud third tone to the dull fourth tone. Since the disappearance of all sound so closely follows the fourth tone, the diastolic pressure can safely be taken at that point. (6) Accurate determination of either systolic or diastolic pressure cannot be made upon decompensating hearts.

**Our Present Knowledge Concerning Leprosy.**—McCoy (*Am. Jour. Trop. Dis. and Prev. Med.*, 1915, iii, 83) says that the organism described by Kedrowski fifteen years ago, and believed to be the cause of leprosy, has been cultivated by a great many observers and in a variety of different ways. In addition to this acid-fast bacillus, diphtheroid organisms have been grown so many times from leprous tissues that the relationship of this group to the bacteria of the disease in question still demands an explanation. A tremendous number of attempts to reproduce the disease in lower animals have been futile. Indeed some 50 instances in which human bodies have been inoculated with leprous tissue tend to prove that this is an entirely safe procedure. This failure to produce an undoubtedly infectious disease with the acid-fast bacillus of leprosy, has naturally led to the suspicion that some other organism is the causative agent, but as yet it has not been demonstrated. There exists no support of Hutchinson's theory of the relation of the disease to fish-eating. Complement-fixation tests are generally positive and specific when the sera of the lepers are tested against antigens prepared from extracts of lepromas. The same sera very frequently bind complement when tuberculin is used as an antigen; finally, between 40 and 90 per cent. of all lepers give a positive Wassermann reaction, though they consistently give negative results with Noguchi's luetin test. All of these biological reactions are most pronounced in cases of the nodular type. At the present time we are still in ignorance as to how the disease is conveyed from person to person, or where the organism sojourns outside the human host. The bacillus doubtless escapes through open lesions of the skin and mucous membranes, but is probably never present in any of the excretions or secretions of the body. Healthy "nasal carriers" have been repeatedly observed. The studies of Hollmann go far toward disclaiming the role of heredity in the etiology of this disease. No positive diagnosis of leprosy should be made without the aid of microscopic examination of some of the tissues. Vaccine and antisera have thus far been of little value in treatment. Practically the only remedy giving favorable results is chaulmoogra oil. It is doubtful if any cases are ever cured. The protection of the community practically resolves itself into segregation of the afflicted.

**The Lymphocyte and Natural and Induced Resistance to Transplanted Cancer.**—MURPHY and MORTON (*Jour. Exper. Med.*, 1915, xxii, 204) report the results of their observations on the changes in the number of circulating lymphocytes in experimental carcinoma in mice, and the relation of this lymphocytosis to immunity. The basis for these observations appear in earlier communications in which the authors noted that adult animals deprived of most of their lymphoid system by Roentgen rays, no longer resisted the growth of heterologous tissues. The animals were divided into three groups: (a) Those having a natural immunity. (b) Those in which immunity was induced by the subcutaneous or intraperitoneal injections of a small amount of homologous living tissue at least ten days before inoculating the cancer graft. (c) Susceptible animals not naturally immune nor rendered so by previous treatment. In the first two groups (a and b), a definite lymphoid crisis occurs in the circulating blood within twenty-four hours after the introduction of the cancer graft which does not

take. In control animals in which the tumor grows, there is no such lymphoid response, while the polynuclear cells show a tendency to increase. Additional experiments show that this lymphoid reaction is not merely an accompanying factor in the immune period, but is essential to it. This is shown by the fact that destruction of the lymphocytes by Roentgen rays causes a loss of this natural or acquired immunity, thus rendering these animals susceptible to the tumor graft. In these cases, of course, there is no lymphoid response following the inoculation.

## SURGERY

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**The Immediate and Late Disturbances from Kulenkampff's Anesthesia by Injection of the Brachial Plexus.**—SCHEPELMANN (*Deutsch. Ztschr. f. Chir.*, 1915, cxxx, 558) says that during the past year and a half he has anesthetized the upper extremity by Kulenkampff's method in 300 cases and among harmless symptoms, has observed many times, arising suddenly, very disturbing symptoms which deserve consideration. Kulenkampff's technic was followed closely. By experimentation on rabbits Schepelmann found that injection of large doses of sinecain, cocain, or novocain, produced very severe cerebral symptoms. In cadavers he injected the brachial plexus with a methylene blue solution and found that by injecting exactly into the nerve sheath, the methylene blue extended itself under the spinal dura mater upward and downward over wide distances, many times upward as far as the brain. Aside from the harmless Horner symptom-complex (contraction of the lid-cleft and pupil of the same side, sinking backward of the eyeball, redness and sensitiveness of the conjunctiva), there were observed in 4 of the 300 cases more or less marked dyspnea in consequence of injuries of the pleura. In one case pneumothorax developed and twice, at first, alarming but transitory cerebral disturbances. Altogether there were 7 cases in connection with which disagreeable immediate effects were recorded. If, however, narcosis had been substituted for this method, at least, as many cases with disagreeable disturbances would have been met among patients with recent wounds calling for anesthesia without a preliminary preparation of the gastrointestinal tract. The Kulenkampff method should not be employed